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DEVELOPMENT OF PORTABLE NEAR INFRARED SYSTEM FOR HUMAN SKIN MOISTURE

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In this study, portable near infrared (NIR) system was newly integrated with a photodiode array detector, which has no moving parts and this system has been successfully applied for evaluation of human skin moisture. The good correlation between NIR absorbance and absolute water content of separated hairless mouse skin was, *in vitro*, showed depending on the water content (7.42-84.94%) using this portable NIR system. Partial least squares (PLS) regression was used for the calibration with the 1100-1650 nm wavelength range. For the practical use for the evaluation of human skin based on moisture, PLS model for human skin moisture was, *in vivo*, developed using the portable NIR system based on the relative water content values of stratum corneum from the conventional capacitance method. The PLS model showed a good correlation. This study indicated that the portable NIR system could be a powerful tool for human skin moisture, which may be much more stable to environmental conditions such as temperature and humidity, compared to conventional methods. Furthermore, in order to confirm the performance of newly integrated portable NIR system, scanning type conventional NIR spectrometer was used in the same experiments and the results were compared.